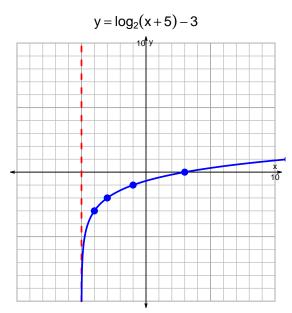
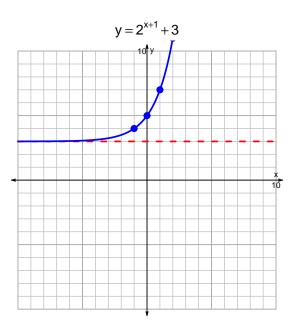
s18: EXP LOG (SLTN v368)

1. (10 pts) Graph $y = \log_2(x+5) - 3$ and $y = 2^{x+1} + 3$ on the grids below. Also, draw any asymptotes with dashed lines.





Somewhat useful hint: $2^3 = 8$, and thus $\log_2(8) = 3$.

2. (10 pts) Write (but do not evaluate) the solution to the equation below by writing a logarithmic expression. Please do not do any arithmetic; just move numbers around.

$$19 = \left(\frac{4}{5}\right) \cdot 2^{-7t/3}$$

Divide both sides by $\frac{4}{5}$.

$$\frac{19 \cdot 5}{4} = 2^{-7t/3}$$

Take log, base 2, of both sides.

$$\log_2\left(\frac{19\cdot 5}{4}\right) = \frac{-7t}{3}$$

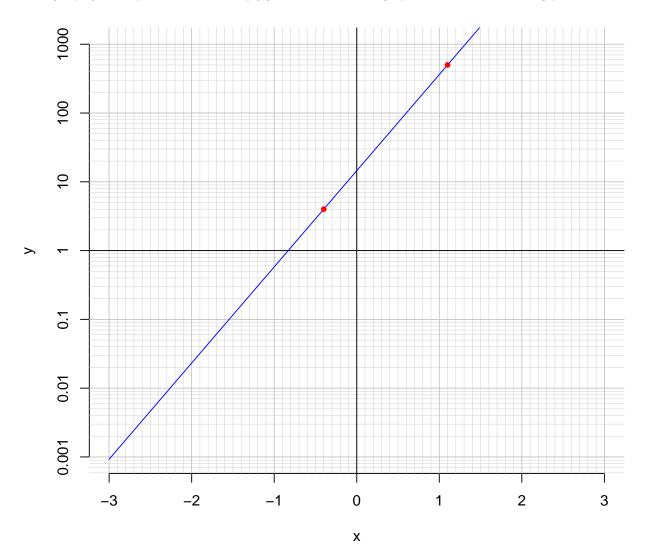
Divide both sides by $\frac{-7}{3}$.

$$\frac{-3}{7} \cdot \log_2\left(\frac{19 \cdot 5}{4}\right) = t$$

Switch sides.

$$t = \frac{-3}{7} \cdot \log_2\left(\frac{19 \cdot 5}{4}\right)$$

3. (10 pts) An exponential function $f(x) = 14.5 \cdot e^{3.22x}$ is graphed below on a semi-log plot.



a. Using the plot above, evaluate f(-0.4).

$$f(-0.4) = 4$$

b. The inverse function is logarithmic.

$$f^{-1}(x) = \frac{1}{3.22} \cdot \ln\left(\frac{x}{14.5}\right)$$

Using the plot above, evaluate $f^{-1}(500)$.

$$f^{-1}(500) = 1.1$$